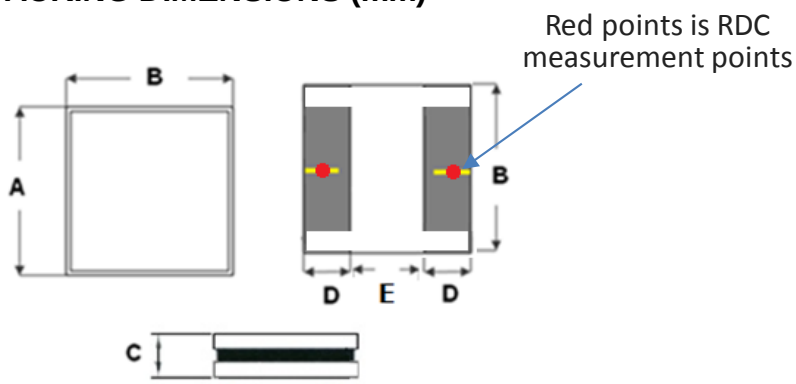
Version: 1.0

COIL SPECIFICATION

RoHS COMPLIANT

ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

PACKING DIMENSIONS (mm)



PHN4020	Dimensions
A	4.0 ± 0.2
B	4.0 ± 0.2
C	1.8 ± 0.2
D	1.2 Ref
E	1.6 Ref

EXPLANATION OF PART NUMBERS

1	2	3	4	5		6	7	8	9	10
P	H	N	40	20		A	- 1	R	0	M
	①			②		③		④		⑤

1. Product Name
2. Dimensions
3. Material
4. Inductance Code
5. Inductance Tolerance (N = 30% , M = 20%)

ELECTRICAL CHARACTERISTICS

HUNGTRON Part Number	Inductance (uH)	Test Frequency (KHz)	DCR (mΩ) Max	I sat (A) typ.	I rms (A) typ
PHN4020A-R33□	0.33	100	10	14.0	7.0
PHN4020A-R47□	0.47	100	17	12.0	6.0
PHN4020A-1R0□	1.00	100	35	7.5	4.5
PHN4020A-1R5□	1.50	100	45	6.5	3.8
PHN4020A-2R2□	2.20	100	55	5.5	3.5
PHN4020A-3R3□	3.30	100	75	4.5	2.8
PHN4020A-4R7□	4.70	100	95	3.8	2.3
PHN4020A-5R6□	5.60	100	105	3.4	2.0
PHN4020A-6R8□	6.80	100	120	3.0	1.6
PHN4020A-100□	10.0	100	160	2.5	1.3
PHN4020A-150□	15.0	100	300	2.3	1.8
PHN4020A-220□	22.0	100	400	2.2	1.9

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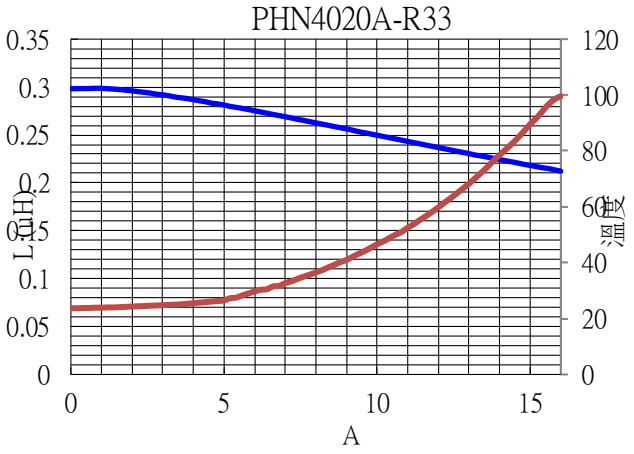
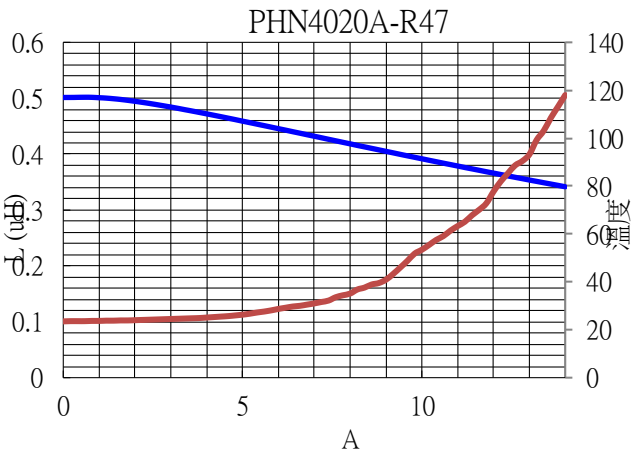
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

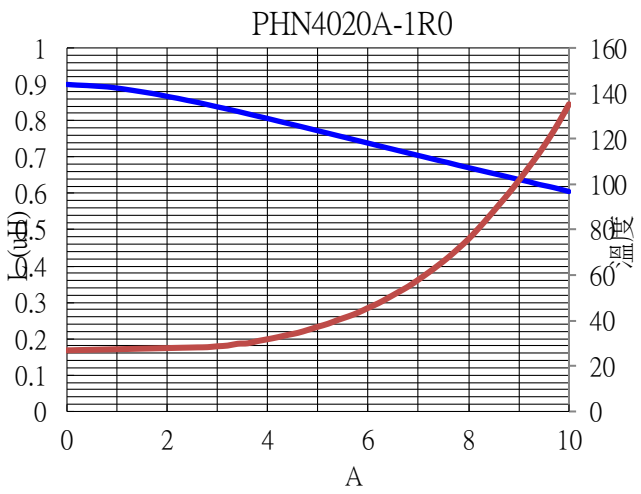
Note：

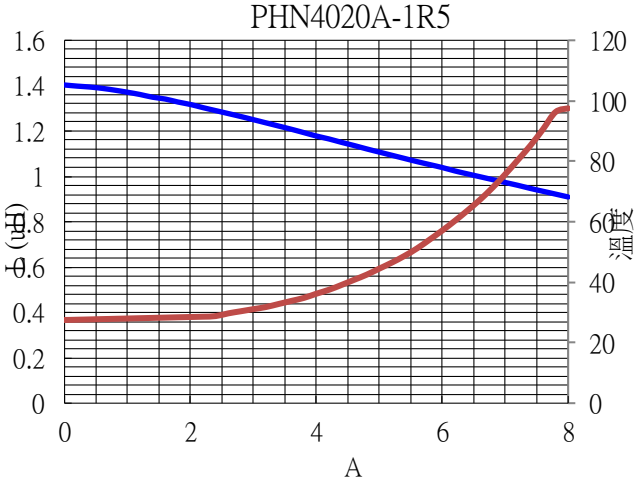
- ●When ordering please specify tolerance and packaging codes.
- ●L:Microtest6379, 100KHz/1V
- ●RDC:Digital Milliohm Meter Agilent/HP4338B
- ●Isat & Irms : Microtest 6379, 100KHz/1V
- ●Isat for Inductance drop30% from its value without current typical.
- ●Irms for a 40℃ rise above 25℃ ambient typical.
- ●If Use wave soldering is there will be some risk.(Crack、unwitting& Mark Shed
- ●Re-flow soldering temperatures below 240 degrees,there will be unwitting risk
- ●Operating Temperature Range -40℃ to +125℃(Including self-temperature sise)
- ●When total area of exposed wire occurring to each sides is not greater than 75% of coating resin area, that is acceptable.

PERFORMANCE CURVES









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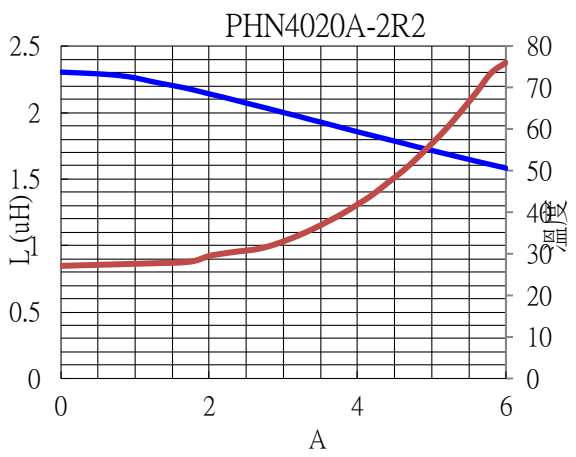
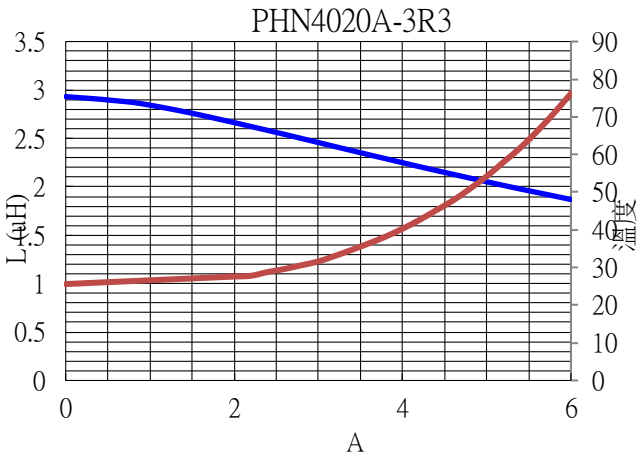
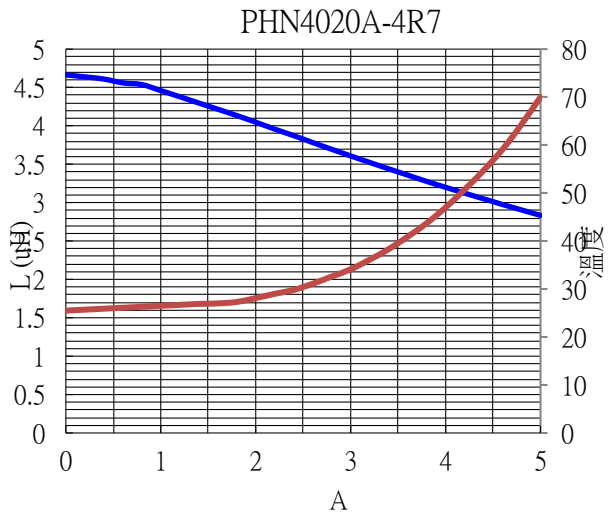
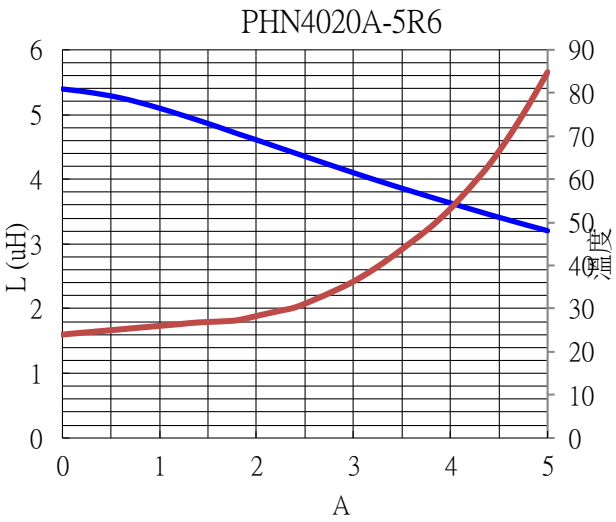
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

PERFORMANCE CURVES









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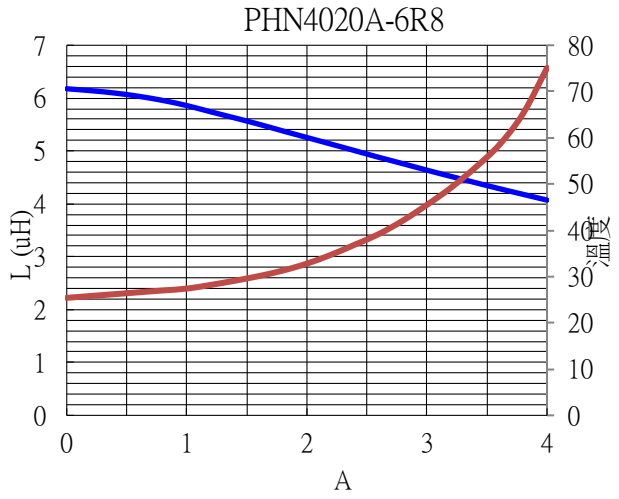
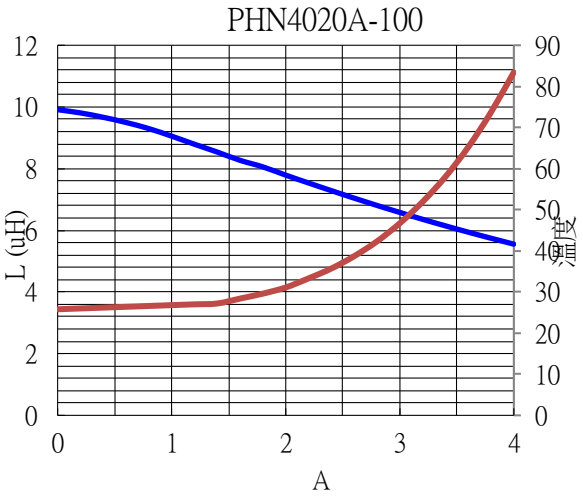
CHARACTERISTICS

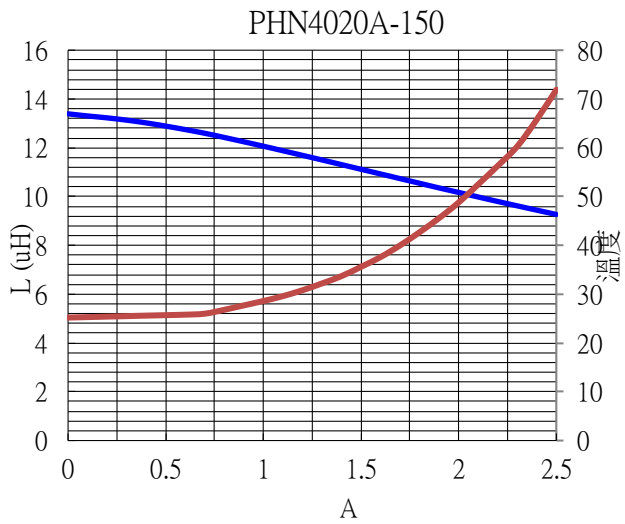
RoHS COMPLIANT

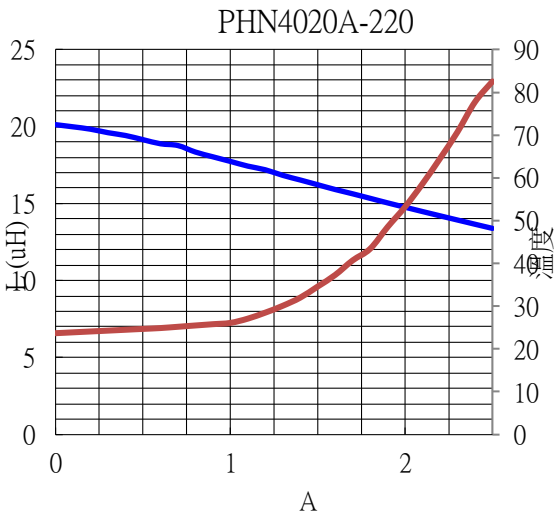
ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

PERFORMANCE CURVES









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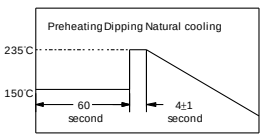
CHARACTERISTICS

RoHS COMPLIANT

ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

Reliability and Test Condition

Item	Performance	Test Condition
Operating Temperature	-40~+125℃(Including self-temperature rise)	
Electrical Performance Test		
Inductance L	Refer to standard electrical characteristic list	Agilent-4291, Agilent-4287 Agilent-4192, Agilent-4285
Q		
SRF		Agilent-4291
DC Resistance		Agilent-4338
Rated Current	Base on temp. rise & △L/L0A≦30%.	Saturation DC Current (Isat) will cause L0 to drop approximately △L(%).
Temperature Rise Test	?T 40?Max	Heat Rated Current (Irms) Willcausethecoil temperature rise approximately △T(℃) without core loss. 1.Applied the allowed DC current. 2.Temperature measured by digitalsurfacethermometer
Mechanical Performance Test		
Resistance to Soldering Heat MIL-STD-202 METHOD 210	1. Inductors shall be no evidence of electrical and mechanical damage. 2. Inductance within ±10% of initial value	Temp.: 260±5℃ Time: 10±1.0 Sec
Solderability Test ANSI/J-STD-002	More than 95% of terminal electrode should be covered with solder.	 be dipped in a melted solder bath at 235±5℃ for 4±1seconds.

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CHARACTERISTICS

RoHS COMPLIANT

ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

Reliability and Test Condition

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td colspan="3">Reliability Test</td></tr>
<tr><td>Humidity Test
MIL-STD-202
METHOD 103</td><td rowspan="6">1.Visual examination：No mechanical damage
2.Inductance：within±10% of initial value

Conditions for 1 cycle
<table><tr><th>Step</th><th>Temperature(℃)</th><th>Times(min.)</th></tr><tr><td>1</td><td>-55±2</td><td>30±3</td></tr><tr><td>2</td><td>Room</td><td>Within5</td></tr><tr><td>2</td><td>85±5</td><td>30±3</td></tr></table>Total:100 cycles
Measured at room temperature after placing for 2 to 3 hrs</td><td>1.Temperature：40±2℃
2.Humidity：90 ~ 95%
3.Time：500 ±8hrs
4.Measured at room temperature
after placing for 2 to 3 hrs</td></tr>
<tr><td>Thermal Shock Test
MIL-STD-202
METHOD 107</td><td></td></tr>
<tr><td>High Temperature Life Test
MIL-STD-202
METHOD 108</td><td>1.Temperature：85±2℃
2.Time：500±8hrs
3.Measured at
room temperature
after placing for 2to3 hrs</td></tr>
<tr><td>Humidity Resistance Test
MIL-STD-202
METHOD 103</td><td>Temperature:40±2℃
Humidity:90~ 95%
3.Time:500±8hr.
4.Recovery:2 to 3hrs of recovery under the standard condition after the removal from test chamber.</td></tr>
<tr><td>Low temperature Storage Test
JESD22-A119</td><td>1.Temperature：-40±2℃
2.Time：500±8hrs
3.Measured at
room temperature
after placing for 2to3 hrs</td></tr>
<tr><td>Random Vibration Test
MIL-STD-202
Method 204</td><td>Appearance: Cracking, shipping and any other defects harmful to the characteristics should not be allowed.
Impedance: within±30%</td><td>Frequency: 10-55-10Hz for 15 min.
Amplitude: 1.52mm
Directions and times:
X, Y, Z directions for 15 min.
This cycle shall be performed 12 times
in each of three mutually perpendicular directions
(Total 9hours).</td></tr>
</table>

CHARACTERISTICS

RoHS COMPLIANT

ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

Soldering and Mounting

1. Soldering

Mildly activated rosin fluxes are preferred.terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

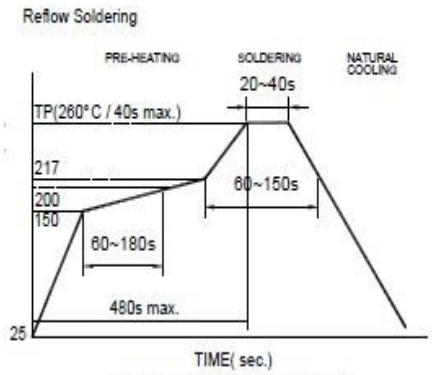
1.1 Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

1.2 Soldering Iron(Figure 2):

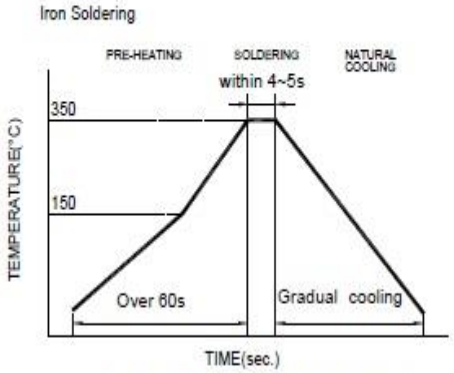
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- 355°C tip temperature (max)
- Never contact the ceramic with the iron tip
- 1.0mm tip diameter (max)
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- Limit soldering time to 4~5 sec.



Reflow times: 3 times max.

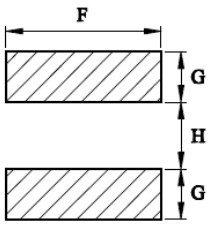
Fig.1



Iron Soldering times: 1 times max.

Fig.2

Recommended PC Board Pattern



Symbol	Dimension
F	4.0
G	1.2
H	1.6

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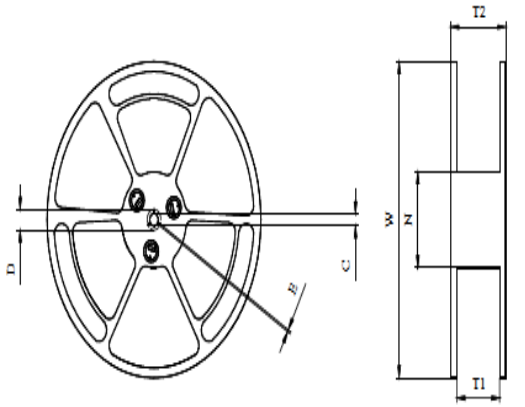
PACKING FOR SMD

RoHS COMPLIANT

ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

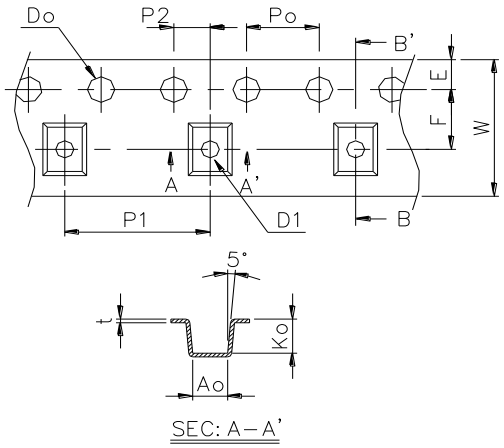
Packaging Information

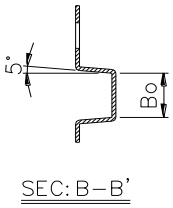
Reel Dimension



Type	W(mm)	D(mm)	C(mm)	T1(mm)	N(mm)	T2(mm)	E(mm)
ϕ 330	330±1.5	21.5+0.5/-0	13+0.5-0.2	2.5+0.5/-0	100±1.5	16.9±0.4	2.00±0.5

Tape Dimension





Item	specification	Tol.(+/-)
W	12.00	±0.20
E	1.75	±0.10
F	5.50	±0.05
D0	1.50	+0.10,-0
D1	1.50	±0.10
P0	4.00	±0.05
P1	8.00	±0.10
P2	2.00	±0.05
P0*10	40.00	±0.20

Item	specification	Tol.(+/-)
t	0.25	±0.05
A0	4.25	±0.10
B0	4.25	±0.10
K0	2.05	±0.10

PACKING FOR SMD

RoHS COMPLIANT

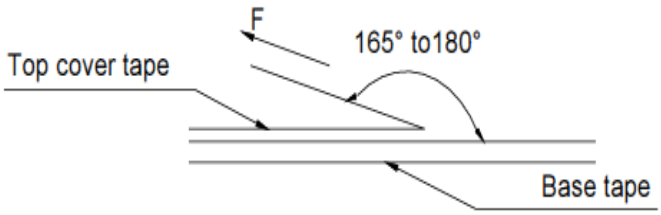
ITEM P/N	PHN4020A-SERIES	TEST INSTRUMENT	Microtest6379 / Agilent4338B
PRODUCT	Power Inductor	TEST FREQUENCY	100 KHz / 1V

Packaging Quantity

Chip size	Chip/Reel
PHN4020	2000

Tearing Off Force

Tearing Off Force



The force for tearing off cover tape is 15 to 80 grams in the arrow direction under the following conditions.

Room Temp. (℃)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions

  To maintain the solderability of terminal electrodes:

  1. products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
  2. Temperature and humidity conditions: Less than 40℃ and 60% RH.
  3. Recommended products should be used within 12 months form the time of delivery.
  4. The packaging material should be kept where no chlorine or sulfur exists in the air.

- Transportation

  1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
  2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
  3. Bulk handling should ensure that abrasion and mechanical shock are minimized.